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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/610,969	07/01/2003	Lewis J. Daly	054_009	1467
20874	7590	01/14/2005	EXAMINER	
WALL MARJAMA & BILINSKI 101 SOUTH SALINA STREET SUITE 400 SYRACUSE, NY 13202			BEISNER, WILLIAM H	
			ART UNIT	PAPER NUMBER
			1744	

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/610,969	DALY, LEWIS J.	
	Examiner	Art Unit	
	William H. B isner	1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/24/04</u> . | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement filed 6/24/2004 has been considered and made of record.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-13 and 15-19 are indefinite because it is not clear which statutory class of invention is being claimed in independent claims 1, 15 and 17. Claims 1, 15 and 17 recite in the preambles of the claims that a system is claimed while the body of the claim positively recites method steps of using the system. As a result, it is not clear if an apparatus or method of use is the claimed invention.

Claims 1-13 and 15-19 are rejected under 35 U.S.C. 101 because the claims are directed to neither a "process" nor a "machine", but rather embraces or overlaps two different statutory classes of invention set forth in 35 USC 101 which is drafted so as to set forth the statutory classes of invention in the alternative only.

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With respect to claim 3, statement that the water is provided to the microorganisms “at a fast rate” is indefinite. It is not clear what is intended by “a fast rate”. How does this differ from a periodic flow of water introduced to the bed, if at all?

In claims 4 and 5, “said water” lacks antecedent basis. Note claims 4 and 5 depend from claim 1 rather than claim 2.

In claim 7, “the cartridges” lacks antecedent basis. Claim 1 merely recited “at least one cartridge”.

In claim 8, “the microorganism laden water film” lacks antecedent basis. Claims 1 and 2 are silent as to the presence of “a film”.

In claims 9-13, “the carrier” lacks antecedent basis. Note claims 1 and 7 are silent with respect to “a carrier”. The carrier is first recited in claim 8. As a result, it appears that claims 9-13 should depend from claim 8 rather than claim 7.

In claim 14, lines 3-4, “extending through center” is indefinite. It is not clear with respect to the center of what.

In claim 15, the recitation of “contains a gas, water inlets, outlets at opposite ends” is indefinite. In view of this claim language, it is not clear which of the recited inlets and outlets are located on the opposite ends.

In claims 16 and 18, it is not clear if the recited “vertical tube” is provided in fluid communication with the previously recited gas inlet or is an additional means for introducing gas into the housing. Clarification and/or correction is requested.

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4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 6, 8, 13, 15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Lipp GMBH (DE 20202722).

With respect to claim 1, the reference of Lipp GMBH discloses providing at least one biofilter cartridge (28) that functions to sustain microbial activity that will function to consume H<sub>2</sub>S contained in a stream (11) of methane gas (biogas) which includes establishing a stream (11) of methane gas and transporting the gas stream (11) directly into a biofilter system (9) which contains at least one cartridge (28) containing selected microorganisms which function to biodegrade hydrogen sulfide followed by recirculating the treated methane to a storage reservoir (8).

With respect to claim 2, the cartridge (28) is positioned vertically and water (14) is circulated through the microorganisms.

With respect to claim 3, the wetting of the microorganisms with water over intervals of time is considered to meet the claim language “periodically flushed through the microorganisms at a fast rate”.

With respect to claim 6, the microorganisms are bacteria (See “Bakterien” on page 1).

With respect to claim 8, the microorganisms are supported on the carrier (19).

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With respect to claim 13, the claim is met by the instant reference since the claim language only recites that the carrier (19) "may" include biodegradable media.

With respect to claim 15, the reactor cartridge (9) has an outer housing (28,10) that includes gas inlet (11), gas outlet (12), water inlet (13) and water outlet (17) and a source of microorganisms for degrading hydrogen sulfide (19,14) contained within the housing. A stream of methane (11) which contains hydrogen sulfide is passed through gas inlet (11) and through the microorganisms. The treated methane is passed through gas outlet (12) for storage (8).

With respect to claim 16, the reactor (9) is cylindrical in shape (See Figure 2) and is positioned vertically whereby the methane to be treated is introduced into the reactor from the top (10) through a vertical tube (26) which extends to the bottom and allows the methane to flow upwardly through the microorganisms in the cartridge (9) and out of the gas outlet (12) at the top (10) of the cartridge (9).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp GMBH (DE 20202722) in view of Fan et al.(US 5,322,621).

The reference of Lipp GMBH has been discussed above.

If claim 3 is interpreted to define over the periodic addition of water to the microorganisms as disclosed by the primary reference of Lipp GMBH, the reference of Fan et al. discloses that it is known in the art to provide a biofilter (5) with flushing water (3) so as to renew the biofilter (See column 2, line 65, to column 3, line 4).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to periodically flush the microorganisms of the primary reference with a water at a "fast rate" for the known and expected results of renewing the supported microorganisms.

9. Claims 4, 5, 7, 9-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp GMBH (DE 20202722) in view of Phillips et al.(US 6,019,810).

The reference of Lipp GMBH has been discussed above.

With respect to claims 4 and 5, while the reference of Lipp GMBH discloses recycling of the water (See Figure 3) and filtration (33) of the water, the reference is silent as to the pH control of the water.



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The reference of Phillips et al. discloses that it is conventional in the art to pH control the water used within the biofilter bed system so as to maintain a desired pH (See column 9, lines 35-37).

In view of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to control or adjust the pH of the water within the system of the primary reference for the known and expected results of controlling the pH of the water introduced into the biofilter bed. Neutralization of the water would have been obvious so as to maintain the pH of the water at around 7 as is desired of the primary reference (See page 3, "pH-Werte zwischen 7").

While the reference of Lipp GMBH discloses contacting the support material (19) with a flow of water, claim 7 differs by reciting that the water flow is continuous.

The reference of Phillips et al. discloses that it is known in the art to provide a biofilter bed with a continuous or intermittent flow of water (See column 6, lines 53-67).

In view of this teaching and in the absence of a showing of criticality and/or unexpected results, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a continuous flow of water to the support material of the primary reference for the known and expected result of maintaining the proper moisture of the bed, especially during periods of continuous gas treatment.

With respect to claims 9, 10, 11 and 13, the reference of Phillips et al. discloses a granular biofilter carrier material that is known in the art and states that it can include additional materials including plastics, crystalline material and/or biodegradable (peat) material (See column 9, lines 43-53).



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In view of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the carrier material disclosed by the reference of Phillips et al. within the housing of the primary reference for the known and expected result of providing an alternative means recognized in the art to achieve the same result, providing a carrier material for supporting microorganisms during contact with a gas stream and trickle flow of water. The packing material of the reference of Phillips et al. provides additional means for maintaining moisture within the bed.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp GMBH (DE 20202722) in view of Horn (US 5,869,323).

The reference of Lipp GMBH has been discussed above.

Claim 12 differs by reciting that the carrier material is perlite.

The reference of Horn discloses that perlite is a known biofilter carrier material (See column 11, lines 1-36).

In view of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the biofilter bed of the primary reference with a carrier material that includes perlite for the known and expected benefit of providing an art recognized means for providing a carrier material with increased surface area for supporting the microorganisms during the contact with the gas stream to be treated.

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp GMBH (DE 20202722) in view of Jutzi (US 5,407,470) and Walter (US 4,421,534).

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The reference of Lipp GMBH has been discussed above.

While the reference of Lipp GMBH discloses closing the top open end of the filter housing (28) with housing (10) that includes a gas inlet, gas outlet and a water inlet, the reference does not disclose that the housing (10) includes an inlet fan.

The reference of Jutzi discloses that it is known in the art to provide the gas inlet of a biological air filter with an inlet fan (6).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the system of the primary reference with an inlet fan as suggested by the reference of Jutzi for the known and expected result of providing an art recognized means for creating the gas flow required for moving the gas stream through the biofilter housing.

While the housing (28) of the reference of Lipp GMBH includes a water reservoir (15) located at its bottom, the reference does not show the reservoir as a separate element with respect to the housing (28).

The reference of Walter discloses that it is known in the art to provide a biofilter housing (See the Figure) as a separate component relative to a water reservoir space (12).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the water reservoir of the primary reference as a separate structural element as is conventional in the art and evidenced by the reference of Walker. Note it is not considered to be an inventive step to make an integral structure of separable parts (See *In re Dulberg*, 289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961)).

With respect to the location of the gas inlet (11) and vertical inlet tube (12), the reference of Lipp GMBH discloses the use of a centered tube (11,26) (See Figure 5).

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12. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipp GMBH (DE 20202722) in view of Bauer et al.(DE 4331932).

The reference of Lipp GMBH has been discussed above.

While the reference of Lipp GMBH discloses a source (5) that generates a biogas, the reference is silent that the biogas is generated from animal waste, especially cow manure.

The reference of Bauer et al. discloses that it is conventional in the art to generate biogas from animal waste, including manure (See the English language abstract).

In view of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to generate the biogas of the primary reference using animal waste, such as manure, for the known and expected result of providing an art recognized means for generating a biogas for use as a fuel. The specific source of the manure, i.e. cow, pig, etc., would have been obvious based merely on the farm source of the manure while providing the required organic waste that is required to generate the biogas.

### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Beisner whose telephone number is 571-272-1269. The examiner can normally be reached on Tues. to Fri. and alt. Mon. from 6:15am to 3:45pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Warden can be reached on 571-272-1281. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



William H. Beisner  
Primary Examiner  
Art Unit 1744

WHB